

VAPOR PHASE ETCH TRIM STRUCTURE WITH TOP ETCH BLOCKING LAYER

ABSTRACT

A blocking layer is formed on a hard mask having an initial thickness. Lines are fabricated by patterning the blocking layer and the hard mask to provide a line segment, the line segment having a first dimension measured across the line segment; reacting a surface layer of the line segment to form a layer of a reaction product on a remaining portion of the line segment; and removing the reaction product without attacking the remaining portion of the line segment and without attacking the blocking layer and the substrate to form the line segment with a second dimension across the line segment that is smaller than the first dimension. The blocking layer prevents the formation of reaction product on the hard mask so that the initial thickness of the hard mask is maintained. The blocking layer can also serve as an ARC layer for photoresist patterning so that the use of an additional film layer is not required.